SB761
U7N62
1966

(Not for Publication)

August 1967

FOREST INSECT CONDITIONS IN THE NORTHERN REGION

1966

U.S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
Division of State and Private Forestry
Northern Region

Missoula, Montana

1380 (5200)

FOREST INSECT CONDITIONS IN THE NORTHERN REGION 1966

By
Scott Tunnock, Entomologist
Forest Pest Control Branch

CONDITIONS IN BRIEF

Mountain pine beetle infestation levels increased slightly in most stands of mature western white pine in Idaho and Montana. The beetles remained active in four lodgepole pine stands, and were often found in the bases of ponderosa pine trees top-killed by Ips in western Montana. Damage also continued in ponderosa pine stands within the Judith River drainage and Big Snowy Mountains in Montana. The pine engraver killed thousands of ponderosa pines in groups ranging in size from 5 to 400 trees along major drainages in northern Idaho and western Montana. Douglas-fir beetle infestations were scarce; and broods of western pine beetle were also present in some ponderosa pines top-killed by Ips. A fir engraver beetle, Engelmann spruce weevil, and a bark weevil caused minor damage. Spruce budworm defoliation decreased in most of Montana, but the outbreak is moving both westward and northward of Missoula. Acreage of infestation has increased in northern Idaho. The larch casebearer has now spread through more than three-fourths of the western larch type in Idaho and Montana. Larch sawflies damaged 230,600 acres of larch in the two States and, in addition, larch bud moths moderately defoliated 518,000 acres in Montana. The black-headed budworm, which has not been active since 1957, heavily defoliated 10 stands of hemlock on the Kootenai National Forest, Montana, and 12 stands on the Kaniksu National Forest, Idaho. Pine tussock moths moderately damaged ponderosa pines within 17,000 acres near Ashland, Montana. Pine needle-sheath miners were present on a few pines near Missoula, and pitch mass borers infested about 400 lodgepole pines at Trout Creek, Montana.

BARK BEETLES

MOUNTAIN PINE BEETLE, Dendroctonus ponderosae (Hopk.). (D. monticolae Hopk.). Chronic infestations continued to deplete the volume of mature western white pine trees in stands on the Kaniksu, Coeur d'Alene, St. Joe, and Clearwater National Forests in Idaho and in several stands on the Kootenai and Flathead National Forests in Montana. An area of 1,624 acres was surveyed in the Simmons Creek drainage, St. Joe National Forest, Idaho. One tree per acre was killed in 1966. Based on an average of 1,000 board feet per tree, for 1,624 trees, this would represent a loss of 1,624,000 board feet. This exemplifies the volume destroyed in a typical infestation.

Mountain pine beetle damage increased twofold within a 600-acre lodgepole pine stand southeast of St. Regis, Montana, which has been attacked for several years. It is estimated that 2,000 trees were killed. Within 1 to 2 miles of this large outbreak, three other stands contained from 100 to 200 infested trees. Remnants of an outbreak that reached its peak in 1964 are present in a few lodgepole pine stands near the headwaters of the Yaak River, Montana.

Vigorous mountain pine beetle broods are infesting the bases of many ponderosa pine trees top-killed by Ips pini. These infestations extended along major drainages from Darby to Trout Creek, Montana. Damage remained nearly the same as in 1965 on the Lewis and Clark National Forest, Montana. Scattered groups of from 4 to 100 trees were detected within the Judith River drainage and foothills of the Big Snowy Mountains.

Mountain pine beetle pupae and "young" adults at the ends of their feeding galleries within the inner bark of a western white pine tree.

The same mortality level is expected to continue during 1967 in all infested areas.

PINE ENGRAVER, Ips pini (Say). (I. oregonis (Eichh.)). Not since 1961 has damage by this beetle been so prevalent in the Northern Region. Its development is favored by hot, dry spring and summer months. In Montana, more than 300 groups of ponderosa pine trees, containing from 5 to 400 trees, were attacked in stands extending north along the Bitterroot Valley and Clark Fork Valley from Darby to Trout Creek. One 500-acre area near Tarkio contained about 4,000 killed trees.

A group of ponderosa pine trees killed by the pine engraver.

In northern Idaho, damage was not as severe; however, several groups of up to 300 trees were detected east of Grangeville. Occasional smaller groups occurred in ponderosa pine types along the forks of the Clearwater, Salmon, and Coeur d'Alene River drainages.

Populations will probably decline in 1967.

DOUGLAS-FIR BEETLE, Dendroctonus pseudotsugae Hopk. Populations reached their lowest level since 1961. Some areas that contain active infestations are at the head of Swan Creek, east of Kooskia, Idaho; Moose Creek Ranger District, Idaho; and the headwaters of Slate Creek, Idaho.

WESTERN PINE BEETLE, Dendroctonus brevicomis Lec. This beetle has not been a destructive pest for many years in the Northern Region. It was present in the bases of ponderosa pine trees top-killed by Ips pini during 1961 and again in 1966. Under these circumstances, broods are not abundant enough to attack healthy trees the following year.

FIR ENGRAVER BEETLE, Scolytus monticolae (Sw.), killed about 12 Douglas-fir trees, 3 to 8 inches in diameter, west of Clinton, Montana. The stand had been thinned previously.

WEEVILS

ENGELMANN SPRUCE WEEVIL, Pissodes engelmanni Hopk. Terminals destroyed by weevils are noticeable in almost all stands of spruce reproduction within this Region. Upper Pinkham Creek, south of Eureka, Montana, is one area where damage from this weevil occurs consistently.

BARK WEEVIL, probably Pissodes curriei Hopk. A few western white pine saplings were infested near their root collars on the Clearwater National Forest, Idaho. This weevil, usually a secondary pest, killed several pines in Glacier National Park about 4 years ago.

DEFOLIATORS

SPRUCE BUDWORM, Choristoneura fumiferana Clem. Infestations in Montana, south and east of the vicinity of Missoula, are decreasing. Egg mass counts from permanent plots reflect this decline. The number of egg masses is the lowest recorded since the plots were established in 1959 (table 1). However, despite an overall decrease, there were occasional localities of heavy infestations.

Foliar damage in south-central Montana appeared to cover only about 25 percent as much acreage as it did in 1965. In the vicinity of Missoula, however, new infestations indicate the outbreak is moving both westward and northward.

Two heavily defoliated areas of Douglas-fir were sprayed with 13 ounces of undiluted technical malathion per acre. East of Dillon, 62,000 acres were treated and 97 percent of the budworms were killed. On 20,000 acres south of Livingston, in the Mill Creek drainage, 87 percent control was obtained.

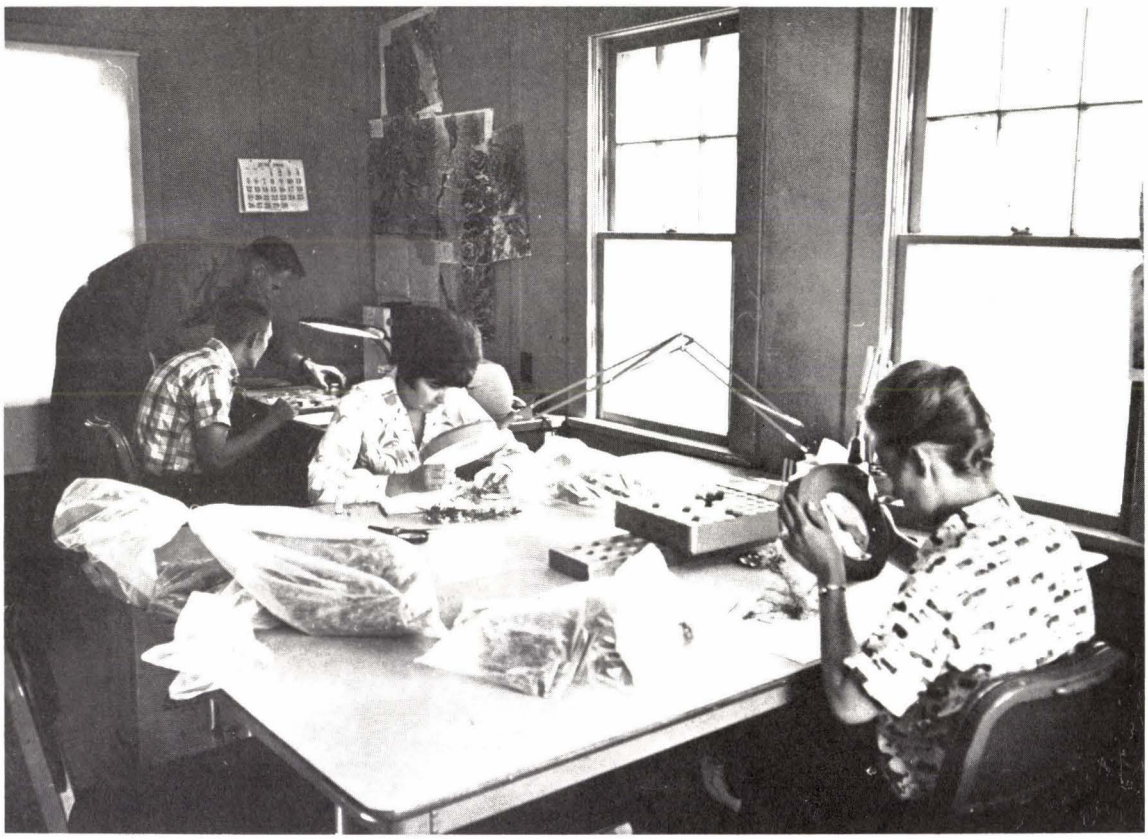
In Idaho, acreage of budworm infestation increased during 1966. A new infestation was observed on the Powell District, Clearwater National Forest, for the first time since 1959. Egg masses were also more numerous (table 1). Foliar damage declined somewhat in the eastern part of the Nezperce Forest, but increased in the western part.

Table 1.--Annual measurements of factors affecting the trend of spruce budworm infestations

Factor	1959	1960	1961	1962	1963	1964	1965	1966
				MONTANA				
Percent defoliation	38.00	34.00	37.00	25.00	35.00	35.00	38.00	25.00
Egg masses per M sq. in. of foliage	10.40	4.10	8.40	10.50	9.50	11.90	5.33 ±1.05	3.12 ±1.19
Percent egg parasitism	3.80	1.00	4.30	6.00	.00	1.10	.50	.00
				IDAHO				
Percent defoliation							1/ 60.00	2/ 40.00
Egg masses per M sq. in. of foliage							2.43 ±.99	5.07 ±1.07
Percent egg parasitism							.00	.00

1/ Data from three plots.

2/ Data from eight plots.



Crew checking development of spruce budworm larvae collected from Douglas-fir stands to be sprayed with malathion.

LARCH CASEBEARER, Coleophora laricella (Hbn.). This insect has infested more than three-fourths of the western larch type in Idaho and Montana (fig. 1) since it became established near St. Maries, Idaho, about 1953.

To combat this pest, the insecticide malathion was tested several times and proved adequate. Also, the parasitic wasp, Agathis pumila (Ratz.), was imported from New England and propagated. During 1966 about 5,000 parasites were "planted" at each of 36 different locations in Idaho and Montana. Distribution of these wasps will be continued in 1967.

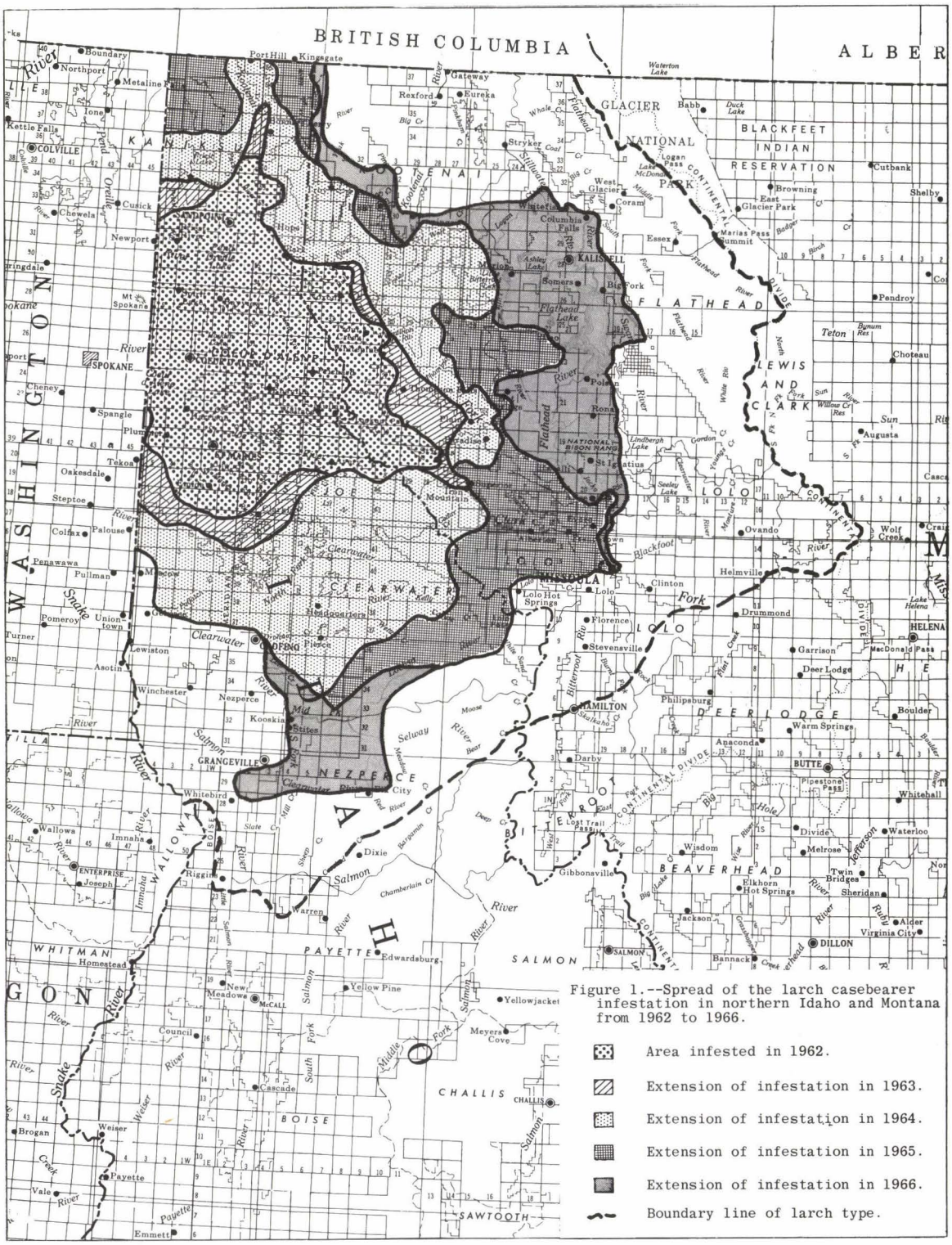


Figure 1.--Spread of the larch casebearer infestation in northern Idaho and Montana from 1962 to 1966.

- Area infested in 1962.
- Extension of infestation in 1963.
- Extension of infestation in 1964.
- Extension of infestation in 1965.
- Extension of infestation in 1966.
- Boundary line of larch type.

Attaching bundles of larch twigs harboring larch casebearer larvae parasitized by Agathis pumila onto nonparasitized trees.

LARCH SAWFLY, Pristiphora erichsonii (Htg.). Infestations have been prevalent for the past several years in northern Idaho and Montana. The amount of damage increased in 1966. Noticeable defoliation occurred in 23 areas, which totaled about 27,000 acres, along the eastern boundaries of the Kaniksu National Forest, Idaho. More than 30,000 acres were infested in the headwaters of the Little North Fork Clearwater River and St. Joe River, Idaho. In addition, 3,600 acres were heavily damaged

along the Slate Creek drainage, Nezperce National Forest, Idaho. The Kootenai National Forest, Montana, contained 98,000 acres of defoliation and 72,000 acres were recorded on the Tally Lake District, Flathead National Forest, Montana. Total acreage of damage was 230,600 acres.

LARCH BUD MOTH, Zeiraphera griseana (Hbn.). Damage by this insect has been increasing in Montana since 1963. A total of about 518,000 acres of western larch were moderately defoliated in 1966; approximately 400,000 of them occurred on the Lolo National Forest and Flathead Indian Agency lands.

About 66,000 acres were affected on the Kootenai National Forest, and 52,000 acres were heavily damaged along west and east facing slopes of the entire Swan River drainage, Flathead National Forest.

BLACK-HEADED BUDWORM, Acleris variana (Fernald). This defoliator has not been active in northern Idaho or Montana since 1957. However, in 1966 it damaged 10 different stands of hemlock (about 18,000 acres) along the western boundaries of the Kootenai National Forest, Montana, from Ross Creek north to Spread Creek in the Yaak River drainage. In addition, budworms fed heavily on hemlock and subalpine fir trees within 17,000 acres scattered throughout 12 stands on the Kaniksu National Forest, Idaho. The largest infested area of 4,800 acres was in the Lightning Creek drainage. The infested stands have a low commercial value; therefore, control was not considered.

A single black-headed budworm egg attached to a hemlock needle.

PINE TUSSOCK MOTH, Dasychira sp. near or equal grisefacta Dyar. Large populations were recorded for the first time in eastern Montana during 1965. However, there was a significant decrease in 1966 and only about 17,000 acres of ponderosa pine contained visible defoliation. This infestation is located 10 air miles northeast of Ashland. A high incidence of polyhedrosis virus was present in a sample of larvae collected during April and in those reared from thousands of eggs collected during the latter part of August. It is expected the virus will greatly contribute toward the decline of this outbreak in 1967.

Pine tussock moth cocoons on ponderosa pine foliage.

PINE NEEDLE-SHEATH MINER, Zelleria haimbachi Busck. Only two reports of minor damage by this moth were received in 1966. A few ponderosa pine and lodgepole pine trees near Missoula, Montana, were infested.

PITCH MASS BORER, Vespamima sp. A notable infestation of this clear-wing moth was discovered at Trout Creek, Montana, in a sapling-size lodgepole pine stand. More than 400 trees were attacked after this stand had been pruned and thinned during the late spring months of 1964. Numerous trees harbored up to five larvae feeding within pruning cuts and many trees were nearly girdled around their root collars by larval mines.

Examination of pitch mass borer damage to a lodgepole pine tree. The base of this sapling was nearly girdled by larval mines.

A pitch mass produced by a pitch mass borer larva feeding within the inner bark of a lodgepole pine.